

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11201 (1985): Cane Crushing Rollers for Sugar Industry
[FAD 2: Sugar Industry]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR CANE CRUSHING ROLLERS FOR SUGAR INDUSTRY

1. Scope — Specifies physical properties and technical requirement of shell and shaft materials, method of construction, recommended tolerances and various tests for the cane crushing rollers for sugar factories.

2. Terminology — The various terms relating to sugar mill rollers used in this standard are as follows (see Fig. 1).

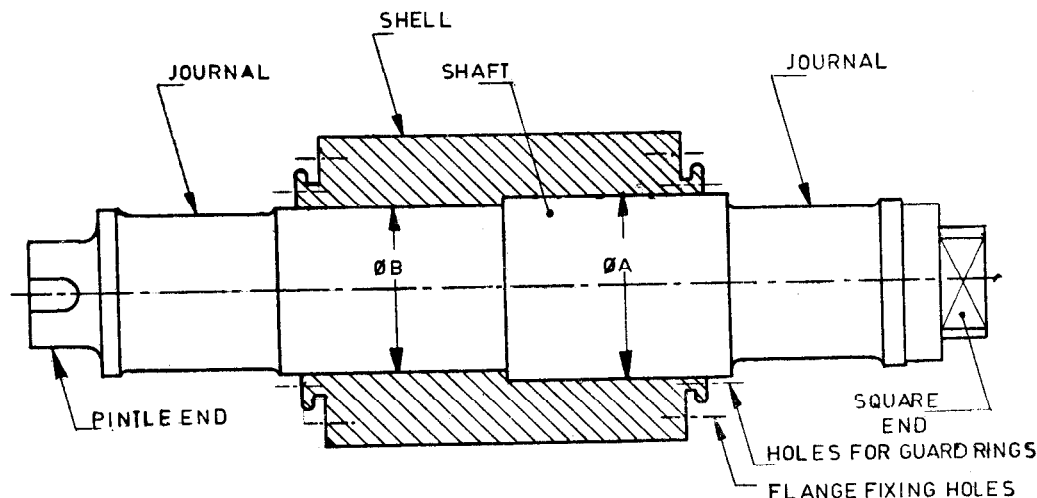


FIG. 1 SUGAR MILL ROLLER SHELL

2.1 Shaft — A round forged and machined steel bar on which cast iron shell is fitted.

2.2 Shell Seat — The long straight portion of shaft on which the shell is fitted.

2.3 Roller Journal — The polished surface at both ends of shell-seat on which bearings are fitted.

2.4 Pintle-End — The shaft end having a key-way for sprocket-fitting is known as pintle-end.

2.5 Square End — The shaft end on which pinion and couplings are fitted.

2.6 Shell — A hollow cast-iron round which is shrunk-fitted on the shaft.

2.7 Flange Fixing Holes — These holes are drilled and tapped at both ends of the shell of the top roller to facilitate fitting of steel flanges. The number and size of these holes vary according to different shell sizes and design.

2.8 Keeper and Guard Rings — These rings are made of mild steel and are shrunk fitted on both ends of the shell to safeguard against shifting of shell towards either end during working and also to avoid entering of juice into the shell. Holes are drilled and tapped on the keeper rings of bottom rollers to fit the juice rings which prevent entering of juice in the bottom roller bearings. The height of this juice ring should not be less than 50 mm.

3. Material — The sugar-mill rollers shall consist of a forged steel shaft and a cast iron shell.

3.1 Shaft — The shaft for sugar mill roller shall be made out of forged, normalized steel conforming to the grade 35C8 (35Mn75) or 40C8 (C40) of IS : 1570 (Part 2)-1979 'Schedules for wrought steels: Part 2 Carbon steel (unalloyed steels) (first revision)', and having a minimum tensile strength of 48 to 58 kg/mm² and elongation 20 percent.

3.1.1 A fillet radius of 8 mm between the journal and the shaft shall be provided.

3.1.2 The shafts shall be ultrasonically tested as given in IS : 8791-1978 'Code of practice for ultrasonic flaw detection of ferritic steel forgings'. To have a thorough examination of the entire surface of the shaft, surface/sub-surface defects shall also be detected by dye penetration test as given in IS : 3658-1981 'Code of practice for liquid penetrant flaw detection (*first revision*)' or magnetic particle inspection as given in IS : 7743-1975 'Recommended practice for magnetic particle testing and inspection of steel forgings' and also as explained in Fig. 2.

Note — Since the shafts are required to transmit heavy torques, they are subjected to cyclic stresses. Therefore, stress relieving of the shafts should be done after every 10 000 crushing hours.

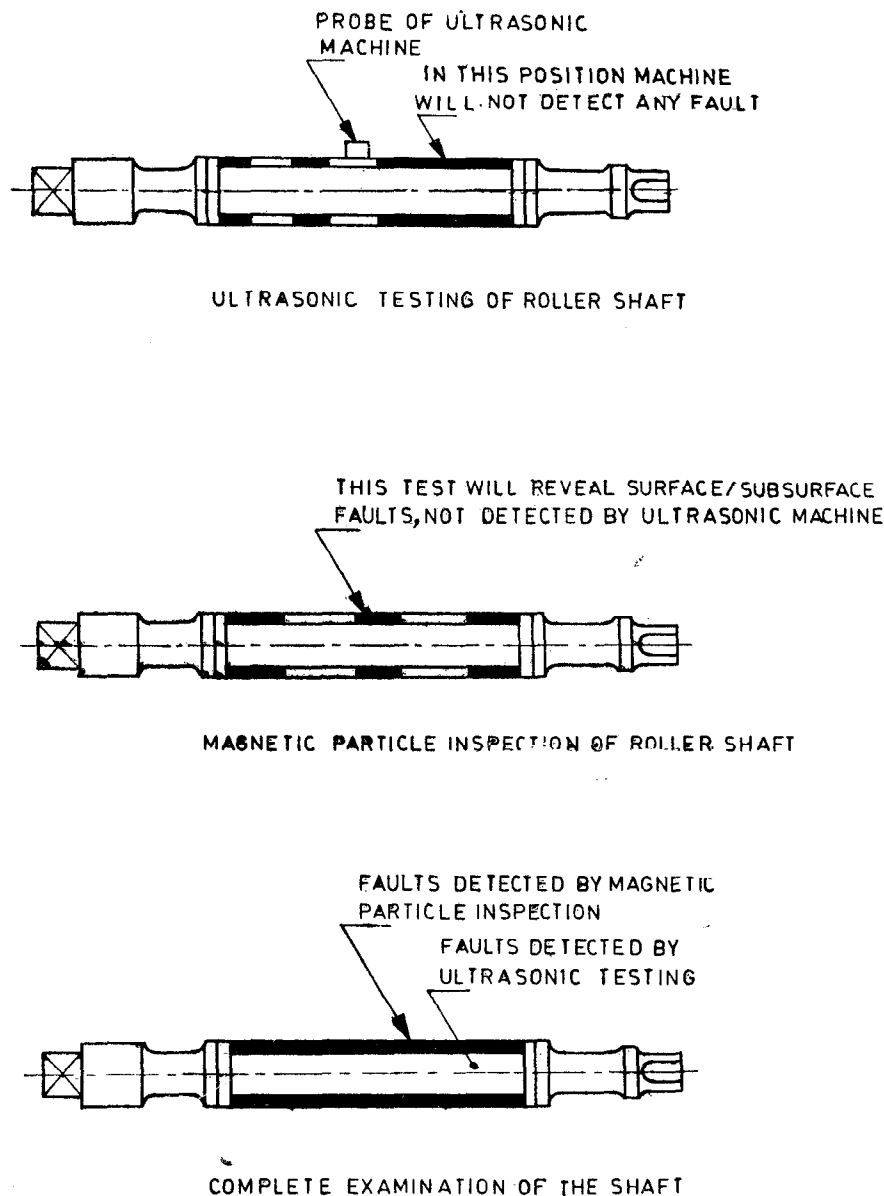


FIG. 2 ULTRASONIC AND MAGNETIC PARTICLE INSPECTION OF ROLLER SHAFT

3.2 Shell — The shell shall be made out of coarse-grain iron and the microscopic structure shall conform to type 'A' distribution of graphite flakes in grey iron, as given in IS : 7754-1975 'Method of designation of the micro-structure of graphite in cast iron', as characterised by uniform distribution and random orientation at 100 magnification.

3.2.1 The shell shall have the following composition:

Total carbon	3.2 to 3.6 percent
Sulphur	0.15 percent, <i>Max</i>
Phosphorus	0.5 percent, <i>Max</i>
Manganese	2.2 to 3.2 percent
Silicon	1.2 to 2.2 percent

3.2.2 To have less wear and tear of the surface, the hardness of the shell casting shall be maintained within the range of 180-210 BHN, as tested by 'Polde' hardness testing method.

4. Shrinking — The shell shall be shrunk fit on the shaft throughout its length and there shall be no counter bore in the shell. For sound gripping, the shrinkage allowance shall range between 0·07 and 0·10 mm per 100 mm shaft diameter.

5. Workmanship and Finish

5.1 The shaft and shell shall be machined properly.

5.2 The shaft and shell shall be free from holes, cracks, seams or other visual defects.

6. Marking — Each roller shall be marked with the following particulars:

- a) Manufacturer's name or recognized trade-mark,
- b) Size (diameter and length), and
- c) Code or batch number.

6.1 ISI Certification Marking — Details available with the Indian Standards Institution.

7. Packing — As agreed to between the purchaser and the supplier.